Biotechnology policy : Can France move from centralized decision-making to citizen's gouvernance ?

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Abstract :
In a traditionally technocratic country such as France, the development of the life sciences has provoked a number of new questions both about the consequences of scientific research and about the ways of regulating it. Risks are no longer only material, they are perceived as ethical and social, and citizens are no longer ready to had over their control to technical experts. In the present paper we shall discuss this evolution, based on interview and focus group material collected over the past six years in France.

Key words :
Biotechnology, perceptions, risk, public debate

Biographical statement
Suzanne de Cheveigné, a physicist by origin, works on media discourse on

science and on public perceptions of science. Some of the other subjects she has worked on are environment in the media or perceptions of evolution and human/animal relations.
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France has a long tradition of centralised technocratic decision-making, and the average citizen, until recently, has had little say in biotechnology policy.[1] In fact, he or she had heard very little about these techniques. Although they were developed in the beginning of the seventies, GMO's only began to be widely discussed in French media in 1997-97[2]. In the present paper, in order to discuss a possible evolution of this situation, and before considering the way the French would like to see these techniques controlled and how they would like to take part in this regulation process, we shall first to examine the preoccupations that GMO's arouse among them, questioning the classical analysis in terms of "risk".

The approach

The approach we adopt here could be called an anthropology of science and techniques, or, more precisely, an anthropology of their reception, of their appropriation by a given society. In practice, the material we shall work on will be mainly discourse : discourse of the media (remembering that the word is plural – their heterogeneity will be an important element) that represent a metaphorical public arena ; discourse of members of the public, in interview situations, discussing representations of problems related to science and technology in general and genetic engineering in particular.

The research described here was carried out in the context of a European project (that also associates American and Canadian colleagues) working, since 1995, on social aspects of the development of modern biotechnology : policy, media coverage (both from the beginnings of genetic engineering in the early 70's) and public perceptions. The latter have been studied both by qualitative methods (individual interviews and focus groups) and through Eurobarometer surveys

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[1] Biotechnology in France, S. de Cheveigné, A. Berthomier, D. Boy, J. Ch. Galloux, H. Gaumont-Prat, in J. Durant, M. Bauer, G. Gaskell (Ed.), *Biotechnology in the Public Sphere : A European Sourcebook,* Science Museum, Londres, 1998, p 51-62

[2] For a detailed history, see Suzanne de Cheveigné, Daniel Boy and Jean Christophe Galloux, *Les Biotechnologies en débat,* Paris, Balland, 2002

(in 1996 and 1999). The great richness of this pluri-disciplinary and pluri-methodological approach should be stressed (not to mention the scope of the international comparison). **Any method taken alone is open to criticism, as is the case of closed-question surveys, particularly in French and more generally southern European academic spheres – read for instance Pierre Bourdieu[3], but also, earlier, Aaron Cicourel[4]. Indeed, in France, the opposition between qualitative and quantitative methods has structured the emergence of a pragmatic "nouvelle sociologie" that has successfully, to our mind, opposed the great deterministic paradigms. But one can end up forgetting the usefulness of long time series of answers to identical questions or of the statistical representativity of large samples. It is time to step over the great divides – in spite if the risks of anathema – and associate methods, playing on their complementarity. The same step should also be taken in the opposite direction, avoiding the temptation of "all-quantitative" international projects. Numbers seem easier to compare than words, across borders, but the apparent simplification is misleading, covering possible linguistic and sociological misunderstandings. We prefer to associate complementary methods, even when the work becomes more complex, rather than entrench ourselves in sterile and obsolete oppositions.**

What risk ?

To understand the way people elaborate the notion of "risk" – and we shall see the term needs questioning - associated with genetic engineering, we shall use the Eurobarometer figures for France but also the answers to an open question it included in 1996, individual interviews we carried out over 1996-1997, focus groups run in 1999, and finally a coherent corpus of French media texts over the period.

The Eurobarometer surveys included questions that explicitly mentioned the risk associated with different applications, food or medical for example. The question was "Do you agree with the idea that this application presents a risk to society ?", the food application being described as "using modern biotechnology in the production of foods, for example to make them higher in protein, last longer or

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[3] Pierre Bourdieu, "L'opinion publique n'existe pas" in *Questions de sociologie*, Paris, Minuit, 1980.
[4] Aaron A. Cicourel, *Method and Measurement in Sociology*, London, Free Press of Glencoe, 1964.

change the tatse". Note that the word risk was used in its familiar meaning, synonymous of danger, without any reference to the probability of occurrence that is included in the technical definition of risk.

Seventy-four percent of the French sample declared in 1999 that genetically modifying foods was "risky", 39 % thought it was useful and only 25 % said it should be encouraged. Daniel Boy cross-analyzed the answers to this question[5]. The fact of considering the application risky is only weakly correlated with wanting to encourage it, whereas finding it useful definitely is. Predictably, 82 % of those who find the application useful and not risky (i.e. good on both counts) and only 3 % of those who think it useless and risky (i.e. bad on both counts), encourage it. If they considered it useless but not risky, only 13 % of the people questioned encourage it, but 52 % of those who think the contrary, that it is useful but risky, encourage it. Perceptions of utility clearly have more influence than risk perceptions on the final judgement. In other words, the balance between utility and risk is not, as is often thought, a symmetrical one ; on the contrary, the first term overweighs the second.

The 1996 Eurobarometer gave us more information about the notion of risk via an open question, so named in opposition to closed questions where one can only express agreement or disagreement with a given statement. Here, the people interviewed could say, in a few sentences and in their own terms, what "comes to mind when you think of modern biotechnology in a wide sense, including genetic engineering ?" The question was put near the beginning of the questionnaire, put before any concrete applications had been mentioned. Although the answers were short[6], they provided very interesting material that can be related to the socio-demographics of the respondents. We analyzed them with discourse analysis software, Alceste[7], that calculates the frequencies of co-occurrences of words (reduced to their roots with the help of a dictionary but then treated only as strings of characters). Classes of frequently associated words appear, and the software indicates the answers that use them characteristically. These can then be interpreted in semantic terms.

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[5] *Les Biotechnologies en débat*, (op. cit.)

[6] They are also somewhat abbreviated on being written down. The examples given show that the meaning nevertheless remains quite clear.

[7] CNRS/ Image (Toulouse).

Among the answers, about 15 % could not be classified and one third expressed a lack of knowledge of the subject ("don't know's" or mistaken answers such as in vitro fertilization or organic food – the latter is frequent in France where the usual expression for such foods is "aliments biologiques", easily confused with "biotechnologie"). Another third of the answers were generally favorable, quoting research, and medical or agricultural applications. The remainder, nearly 20 %, expressed various degrees of worry about biotechnology. These are the answers we shall consider here[8].

If we first examine the spontaneous use of the word "risk", we find it is not frequent : 16 occurrences of the word in 1004 answers. It appears in relatively elaborate answers such as

> "Danger of manipulation. Eugenics. Risk of resuscitating old ghosts like the selection of being having the right to live and others not."

The word "danger" is more frequent (63 occurrences) and, like in the above example, no distinction seems to be made between "risk" and "danger". These two words form the heart of one of the Alceste classes, associated with "problem", "mad cow", "manipulate", "bad", "happen", "world" (as in *Brave New World* by Aldous Huxley) and "artificial". We see that perceived risks are associated with food, eugenics, or more abstractly with artificiality – clearly not only material risks. The respondents statements associated with this class are often evaluative, evoking grand categories such as "humanity", "mankind" or "ethics". The vocabulary is more sophisticated than average with more subjunctives and more logical operators. Some more examples follow in which the reader can often note a strong ambivalence, a balance between risk and benefit :

> "It could create problems later on, too many examples prove it, like mad

[8] For an analysis of all the results, see *Les Biotechnologies en débat*, (op.cit.). For a European comparison, see "Giant Tomatoes, Designer Babies and Playing God - Images of Biotechnology and Nature in Europe", W. Wagner, N. Kronberger, N. Allum, S. de Cheveigne, G. Gaskell, M. Heinßen, C. Midden, M. Odegaard, S. Olsson, B. Rizzo, T. Rusannen et A. Stathopoulou, in M.

cow disease."

"You could grow food in very cold or very hot places. You could fight famine in the world, but the risk is that it's not natural. We'd end up feeding ourselves on pills."

"Progress for science. Improvement of life conditions, for people's health, but with some reserves. Danger of genetic manipulation. Do we measure the impact of these manipulations ?"

"It could be an extraordinary move forward for humanity if it is used intelligently. One could resolve famine in the world. One could also try to manipulate human beings. Big danger."

"I think it's extraordinary but dangerous. It's extraordinary to get so close to God but men can have terrible weaknesses, make bad manipulations like in *Brave New World*."

This category was quite small (6 %)[9] and the answers came from people more educated than the average : 52 % had university education against 33 % in the whole sample. A second class, centered around the word "fear" expressed a more affective version of the opposition to biotechnology. Contrary to the preceding one, the answers associated came from a less educated population (25 % had less than 15 years schooling, against 18 % in the whole sample), an older and more feminine one (58 % women, instead of 50 % expected). It is also larger, composed of about 12 % of the answers. These responses characteristically use words such as "[ordinary] people", "tailor-made babies", "children" "to create" and "monsters". Personal pronouns are over-represented, as well as modal verbs like "to have to", to "be able to" that reflect a normative discourse. Negations are frequent too. Where the "danger/risk" responses carried more argumentation, explicitly opposing risks and benefits according to a utilitarian ethics, the "fear" responses call on affect and emotion and are more coherent with an ethics of veneration of nature. Some examples illustrate this :

"It really leaves me worried, it frightens me. Very dangerous, depending

Bauer and G. Gaskell (Ed.), *Biotechnologie : the making of a global controversy*, Cambridge University Press, to appear in 2002.

[9] Such answers may have been more frequently non-classified due to the wide variety of their vocabulary.

> **on the people who manage the areas. Strong barriers[10] should be put up."**
> **"It's going a little too far. Picking children to order is frightening."**
> "Genetic engineering, that frightens me, the fact of leaving it in the hands of certain persons that could miss-use it. Great barriers are needed. One could make clones, modify the level of thinking of humankind, make man the slave of certain persons because of their political or financial power. We've had so many examples in the past and, alas, the present."
> "I am against. We should leave things as they are. Nature shouldn't be thwarted, it takes revenge."

Here again, what inspires fear are not just health or environmental risks, but also immaterial risks. To go beyond what is said in these short statements made at the beginning of a survey, we carried out individual interviews in 1996-97 and focus groups in 1999, both series questioning people of varied characteristics in terms of gender, education level and type (science *vs*. arts) and socio-professional category. The term risk was not introduced by us into the individual interviews, but the interviewees did use it. It should be remembered that at that time, biotechnology was not yet very present in the media. The risks invoked are not very precise :

> [About a delayed-ripening melon described in article submitted to the interviewees] "What happens when you eat modified melon for 10 years ? What about introducing modified genes into a bacteria then into the melon, then into the human body, and if ever there was a possibility of transmission, because, there again… (…) If there's a risk, it's obvious that it should not be taken. (…) Because the stakes are economical too. No risk should be taken for economic reasons. Now, that people in their laboratories go on getting money to do research on melons, that's necessary."
> **"There, that's the risk. If you play and manipulate enough, it's certain that you can both make more resistant species but also, because of that, drastically modify nature, I'd say in its original freshness, and that is the risk of these new genetic manipulations – no longer controlling what has been provoked."**

[10] In French "garde-fous", literally means barriers for mad people.

In 1999, the focus groups were run around questions much closer to the terms of the Eurobarometer surveys. In particular, we asked people to classify nine applications (seven of which had been run in the surveys) according to whether or not they considered them risky and to explain what they meant by that. Here are some elements of their exchanges where we see that the risks mentioned have become more precise :

> "We put as risky things that can't be controlled or that present an immediate risk to nature or to man. We mainly saw the limits, and the loss of control of a process that can cause deregulation. [Q: Deregulation ?] Beings, monsters or nature without animals. (…) The least obvious [application to classify] was the one that had what I'd call political risks. Those of detecting people with an inheritance, etc. for some collective or political use. Not directly a medical risk."
>
> "I had two thing in mind, risk for health and risk of modification of an equilibrium in which we don't feel too bad. Something we don't yet know about."
>
> "For example, what frightens me is the evolution of a plant in relation to insects that eat it and that this evolution could go towards a modification of the insect that could become even more harmful."
>
> "Risk of the application for humans, of life and death and then the risk in terms of running off course[11]. What could be brought on, the consequences. [Q : Which consequences ?] Eugenics, running off course, Brave New World. Who can judge ?"

Once again we see that the risks invoked are not just material ones. Indeed, the most realistic environmental risks such as gene dispersion or health risks like the development of resistance to antibiotics were practically never mentioned. At the time, the open question or the individual interviews were run (1996-97) , the French media had not yet discussed them very much. But we found a similar phenomenon in the 1999 focus groups : although the elements evoked were more precise – genetic fingerprinting, animal experiments, social instability –the risks

often remained in the realm of political, social or ethical questions. GMO's were rejected not because of the risk they might present for the environment but because they were seen as the first step towards a *Brave New World* !

What kind of "risk management" ?

These observations lead us to question the relevance of the concept of risk as it is usually employed, in a material sense, as a pertinent cognitive category in the formation of public attitudes towards biotechnology, for three reasons which we con summarize. First, according to the Eurobarometer results, perceived risk doesn't explain attitudes towards the different applications. Second, not many people spontaneously use the term of risk (or danger) and certainly not in the technical sense of a mathematical expectancy that takes into account a probability of occurrence. Thirdly, and no doubt most important, particularly when we wish to consider the control processes to be set up, perceived "risk" is as much moral, political and social as it is material. That is the reason for this long detour via the analysis of pubic perceptions : technocratic risk management centered a) on material risks concerning either health or the environment and b) a quantitative evaluation of the probability of the latter, cannot answer public preoccupations. If the public fears loss of traditions, discrimination and eugenics, these "risks" need more than a technical response.

During the focus groups we asked the interviewees about the possibility of regulating biotechnology. They often spoke of "ethical" control, a frame of analysis which has developed over the past twenty years, in phase with the creation of all sorts of ethical committees[12]. Perhaps more interesting and certainly the sign of a more recent evolution in France, a number of people demanded that these committees be a place of debate and of *public* debate. It should be noted that, contrary to this wish, the French National Ethics Committee does not publish the content of its discussions, but only a consensual final opinion. The elements of the debate and in particular the moral foundations

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[11] "Dériver", in French. This term, along with "déraper", to skid, are among the most frequently used to describe the immaterial risks of biotechnology. They are more easily used metaphorically than their English counterparts.

[12] For a critical discussion of the institutionnalisation of ethics, see J. Ch. Galloux, A. Thing Mortensen, S. de Cheveigné, A. Allansdottir, A. Chatjouli, G. Sakallaris, "Bioethics : public concern and political issues : A comparison of four European countries (Denmark, France, Italy

of the arguments used, are not explained, although they could be very useful in the social learning process necessary in face of the developments of the new life sciences. As one of the participants said : "I can only build my own ethics in discussion and dialogue with others."

Some examples of the demand for public discussion and public participation in ethical (or other) committees follow. The reader will note the worry that many people express, who do not think themselves capable of taking part in the debate :

> "I believe we need to think not about the technique but mostly about ethics. We should be as many people as possible. And, above all, not scientists. Simply because they are not… Their point of view is interesting but they have stakes in the game. Citizens must be able to check what is happening at all levels of society. (…) If the ethical committee is made up of old fuddy-duddies, 120 years old all of them - plus a representative of the pharmaceuticals groups, don't forget, they have a lot of medicine to sell …"
>
> "What is important is that there should be ordinary people [in the ethics committee], that it shouldn't be cut off from the public anyhow. The general public should have access to those discussions, even if the general public is incapable of formulating an enlightened opinion on the techniques because they obviously don't have the knowledge that is reserved to a few individuals. The discussion must be open to all. (…) Besides, in face of ethical problems, we are all equal, we all have the same level of knowledge. (…)"
>
> "I think there should be an ethics committee on : "Is it good or not to transfer genes ? Is it good to modify Nature ? What are the possible excesses ? What can these technologies bring us ?" So this ethical committee would be formed of less specialized people, not specialists of a particular field, who would try to develop more general ideas. Ideally, it should be me. But in practice, it's not possible, because I think there are things that are beyond us, both in the field of biology and in that of politics. (…) So ideally, it

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and Greece)", in M. Bauer and G. Gaskell (Ed.), *Biotechnology : the making of a global controversy*, Cambridge University Press, to appear in 2002.

> should be people like me, I think, but in practice… If it's not scientists, it should be philosophers.
> "I think that what they do [in ethics committees] should be explained, and to as wide a population as possible, to get rid of this sort of unsoundable mystery that makes one wonder what goes on behind. It should be as clear as possible, objectives should be determined and the process should be explained."

In face of what is perceived as a complex, multi-faceted "risk", we observe a real, if still somewhat tentative and unsure, demand for a strengthening of public debate about biotechnology. Of course, such an evolution does not only concern this subject, but all scientific activity[13]. It was in this context that a Citizen's Conference – the local version of a consensus conference – was held on the subject food applications of gene technology.

A new form of public debate ?

The Citizen's Conference that took place in spring and summer of 1998 originally appeared as a new episode in the long and chaotic story about the regulation of transgenic corn in France and in Europe. In December 1996, the European Commission had authorised the firm Ciba-Geigy (now Novartis) to sell transgenic corn seed. On February 14th, 1997, the then right-wing French government forbade the planting of genetically modified corn in France in application of the precautionary principle. In April of the same year the European parliament voted the suspension of sale of transgenic corn. In November 1997, the French government (left-wing, since May 1997) authorised for cultivation Novartis' transgenic corn (but forbade that of canola and of beet-root). In December 1997, another firm, Pau-Euralis, asked to be allowed to grow a new variety of transgenic corn but the Minister of Environment then declared that no new transgenic plants would be authorised until a public debate had occurred. Finally, in February 1998, a "Citizen's Conference" was announced.

The setting-up of the conference closely followed the Danish model, except that the 15 panel members were selected by a survey institute to represent the

sociodemographic diversity of the population[14]. Two preparatory week-ends were followed by a public hearing. The panel's advice was very balanced, recommending precautionary measures, the development of public research and the widening of the composition of control committees, but did not ask for a moratorium.

The Citizen's Conference was a totally new phenomenon to the traditional French regulatory system, one that would seem to answer the demand for public debate that we have discussed above. For once, "ordinary people" were not it the usual inferior position of listening to the explanations scientists thought they should have. On the contrary, they were on the rostrum, leading the debate, demanding answers, in control of the situation because they had been formally invested with an official mission. The usual conditions of the exchange were reversed and the content was quite new. Unfortunately, the event had little echo, either in the press or in the political sphere. None of the main newspapers gave the public conference first page treatment.[15] As a comparison, it received less coverage (measured in numbers of articles, surface or presence on first page) than the clone Dolly in February 1997, the decoding of the human genome in April 2000 or the trial in June 2000 of the activist José Bové for having "taken down" a McDonald's restaurant in Millau in protest against American trade restrictions on French foods. One cause of this relatively low coverage was the fact that at the same moment France was hosting - and winning - the football World Cup : the Citizen's Conference no doubt had less "news value". But the other explanation, less circumstantial, was the profound ambivalence of the government, of the Parliament and of part of the media in face of this new regulatory object that did not have a very clear place in the democratic process.

Even if the media coverage was not very intense, the press was generally favourable towards what was seen as a new element of public debate. Nevertheless, the recommendations produced by the panel were received

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[13] Voir Daniel Boy and Suzanne de Cheveigné, "Enquête : les attentes du public vis à vis de la science" in JF Sabouret et P. Caro (Ed.) *Chercher : Jours après jours les aventuriers du savoir*, Editions autrement, Paris 2000, p 202-214.

[14] In this sense, the sample was representative of the population, but it was of course too small to be statistically significant. This point will cause some confusion in the commentaries on the conference.

[15] Except *Le Monde* that mentioned it in a small insert referring to an article in the inside pages.

diversely. Generally speaking, the popular newspapers, *Le Parisien* in particular, were more convinced that the elite press which marked a certain degree of scepticism towards the activity of the citizens. Now, considering that less educated people – who constitute a large part of the readership of popular newspapers - often express their powerlessness in face of science[16], this new situation where ordinarily ignorant citizen's were in control was symbolically important. *Le Parisien* seems to understand this better than the elite papers. It is unfortunate that this experiment in public debate that the Citizen's Conference represented should have had so little echo.[17] Nor did it did not leave strong memories : none of the people we questioned in 1999 about possible regulation processes mentioned it.

In the face of a biotechnology "risk" that the French population often perceives as a political, social and economical one, new modes of dialogue with policy makers are necessary. Many people call for them, be it in a somewhat confused way. New forms of social appropriation of scientific knowledge are slowly being elaborated, for instance by patient or environmentalist groups. Citizen's conferences could also play a role. But the resistance to change on the part of a French technocratic tradition, centred around material risk, remains strong.

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[16] Suzanne de Cheveigné, « La science médiatisée. I. Le discours des publics », *Hermès* 21, « Science et médias », 1997, p. 95-106.

[17] A second consensus conference took place in February 2002 on climate change. It was even more confidential.